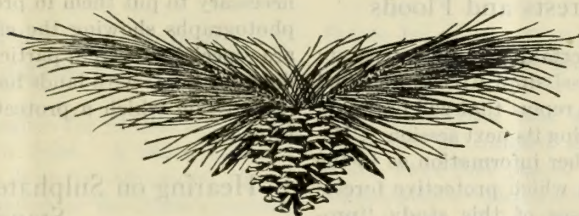


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UNITED STATES DEPARTMENT OF AGRICULTURE

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Announcements

Data Wanted on Forests and Floods

The Forest Service is undertaking a general study of forest conditions in the Mississippi River watershed as a basis for a comprehensive report that will probably be placed before Congress during its next session. The general plan is to bring together information as to the location and size of tracts on which protective forests are needed. For the purposes of this study "protective forest" is defined as a forest which, because of steepness of slope, erodible soil, or character of precipitation, or for some other reason, exerts a direct beneficial influence upon the behavior of streams. State forestry organizations, engineers, and other organizations and individuals have been asked to assist in this study by giving the Forest Service whatever data and information are available to them as to the protective influence of forests, flood history, and forestry measures needed to supplement engineering works. Anyone having data or information of possible value in this study is requested to communicate it to Associate Forester E. A. Sherman, United States Forest Service, Washington, D. C.

The study is to cover each of the six main tributary basins of the Mississippi watershed—the Ohio River, the upper Mississippi, the lower Mississippi, the Missouri, the Arkansas-White, and the Red River-Ouachita. Data are desired as to the location of areas which, because of climatic, soil, or other conditions, have a marked influence on streamflow or are especially subject to erosion; results of planting different kinds of forest trees on watersheds, as around reservoirs; measures needed to reclaim denuded lands that are rapidly eroding; dates, duration, and causes of floods and high water in the minor tributaries of the Mississippi; the presence of silt deposits or gravel banks in streams; damage to forest, range, or pasture lands resulting in erosion and rapid run-off, and measures

necessary to put them in productive condition. Good photographs showing the effect of improper land use are especially desired, particularly pictures contrasting denuded lands with lands having similar physiographic features on which a protective cover has been maintained.

Hearing on Sulphate Wood Turpentine Standard

The Department of Agriculture has announced its proposal to establish a United States standard for "sulphate wood turpentine." A public hearing to discuss the proposed standard will be held at the office of the Food, Drug, and Insecticide Administration of the Department of Agriculture, 216 Thirteenth Street SW., Washington, D. C., on August 15, 1927, at 10 a. m.

Australian Solicits Correspondence with American Forester

H. Rooke-Jones, a dairy farmer of New South Wales, has written that he would like to correspond with an American forester who might be interested in going to New South Wales to organize a reforestation project in the northeastern part of the State. His plan is to consolidate the holdings of a number of landowners and purchase other lands so as to make possible the sustained production of timber on a commercial scale. He describes the available land as adapted for the growing of cypress and pine. Mr. Rooke-Jones's address is "Mena," Yelgun post office, via Lismore, New South Wales.

Correction

Through error the Forest Worker for May, 1927, as printed bears the number volume 3, No. 4. Its correct number is volume 3, No. 3.

Because the edition of this periodical is necessarily limited, its free distribution outside of the Government service is restricted to such persons and organizations as State forestry and conservation officials, State agricultural extension directors, faculties and libraries of forest schools, and forestry associations. Others desiring to obtain copies of the Forest Worker can do so by sending 5 cents for a single copy or 25 cents for a year's subscription to the Superintendent of Documents, Government Printing Office, Washington, D. C. Foreign subscriptions: Yearly, 35 cents; single copies, 7 cents.

Material offered for publication in the Forest Worker should be addressed to the Editor, United States Forest Service, Washington, D. C.

FOREST WORKER

Washington, D. C.

JULY, 1927

Vol. 3, No. 4

State Forestry

Florida Provides for State Forestry Organization

A State forestry organization for Florida is provided for in a law approved in June. A State board of forestry of five members is to be appointed by the governor. The administration of the State's forestry activities will be the duty of a State forester employed by the board. Requirements for this position are technical training in forestry and two years' experience in practical and administrative forestry work. The extent and character of a candidate's experience must be certified by the Secretary of the United States Department of Agriculture or a State administrative officer having personal knowledge in the case.

The maximum set for the State forester's salary is \$5,000 a year, and the whole amount appropriated for the use of the board of forestry during the next two years is \$25,000.

Under another new law of Florida anyone who sets fire to or burns any wild forest lands or marshes that are not his own property is subject to a fine not exceeding \$1,000 or imprisonment in the county jail for not more than one year, or both fine and imprisonment. He is also made liable for all damages, and the civil liability for damages obtains whether or not there is criminal prosecution and conviction.

Clarke-McNary Allotments

In the fiscal year 1928 each State cooperating in forest fire protection under the Clarke-McNary law will receive from the Federal Government 8.5 per cent of the estimated cost of adequate protection for its State and private land. Last year's allotments were 7.4 per cent of this cost. In addition to these "regular" allotments the Federal Government will make extra allotments according to the scheme which was originally contemplated under the Clarke-McNary law but which heretofore could not be put into effect because Congress did not appropriate the necessary amounts. The extra allotments, totaling \$110,000, will go to the

States in which State and private budgets for fire prevention alone are greater than the regular Federal allotments.

It is expected that allotments of Clarke-McNary funds will be claimed this year by three new States which have just passed laws to create State forestry organizations—Delaware, South Carolina, and Florida.

State and private funds budgeted for forest protection during the year total less than \$3,000,000. Combined with the Federal allotments, these amount to less than 40 per cent of the \$10,200,000 which would provide the fire protection actually needed for the State and private forest lands in the United States.

The Federal allotments to the cooperating States are as follows:

State	Regular allotments, 8.5 per cent of cost of protection	Extra allotments	Total allotments
Maine.....	\$38,250	\$5,390	\$43,640
New Hampshire.....	11,416	1,870	13,286
Vermont.....	6,698	330	7,028
Massachusetts.....	14,510	3,410	17,920
Rhode Island.....	1,224	110	1,334
Connecticut.....	5,100	1,430	6,530
New York.....	33,022	8,250	41,272
New Jersey.....	7,004	3,850	10,854
Pennsylvania.....	33,448	4,180	37,628
Maryland.....	5,610	880	6,490
Ohio.....	2,363	550	2,913
Virginia.....	30,991	—	30,991
West Virginia.....	16,362	1,870	18,232
North Carolina.....	41,438	—	41,438
Kentucky.....	14,404	—	14,404
Tennessee.....	21,250	—	21,250
Georgia.....	38,250	880	39,130
Alabama.....	38,250	110	38,360
Mississippi.....	32,555	1,100	33,655
Louisiana.....	29,087	3,520	32,607
Texas.....	30,532	330	30,862
Oklahoma.....	13,600	110	13,710
Missouri.....	11,000	—	11,000
Michigan.....	42,594	15,510	58,104
Wisconsin.....	27,276	4,620	31,896
Minnesota.....	55,743	8,690	64,433
South Dakota.....	128	247	375
Montana.....	16,618	2,090	18,708
Idaho (north).....	25,500	6,600	32,100
Idaho (south).....	2,958	550	3,508
Washington.....	36,125	11,330	47,455
Oregon.....	34,892	9,350	44,242
California.....	34,425	12,540	46,965
New Mexico.....	1,006	220	1,226

The amount tentatively reserved for allotment to the three new States is \$12,765.

The total of allotments is \$876,911. The cost of administration and inspection, including studies under section 1 of the law, is \$73,089. These amounts, together with the \$50,000 set aside by the Forest Service for studies of forest taxation, make up the full \$1,000,000 appropriated by Congress for work under sections 1, 2, and 3 of the Clarke-McNary law during the fiscal year 1928.

Unexpended balances of allotments made in the fiscal year 1927 permit additional allotments to two groups of States: (1) Those that at the beginning of the year were not able to qualify for their full allotments but did qualify during the course of the year; and (2) those that had emergency fire conditions during the year. These States, and the additional allotments to them, are as follows:

GROUP I		GROUP II	
Georgia-----	\$4, 920	Montana-----	\$1, 000
Mississippi-----	2, 810	Idaho-----	1, 500
Oklahoma-----	1, 020	Washington-----	4, 250
		Oregon-----	1, 150
Total-----	8, 750	California-----	450
		Massachusetts-----	100
		Alabama-----	300
		Total-----	8, 750

Wisconsin Constitutional Amendment

A joint resolution affecting forest taxation which had twice passed the Wisconsin Legislature was ratified by the people of the State in the election of April, 1927. It so amends the State constitution as to empower the legislature to classify forests and minerals for taxation purposes and have the forests and minerals assessed and taxed either separate from or together with the land.

Oregon Laws Aimed at Fire Control

Oregon legislation of 1927 authorizes a revolving fund of \$25,000 to be used by the State forester in meeting emergency claims such as those for fighting fires in times and localities of unusual hazard. The governor is given authority to extend or shorten the burning season. The burning of slash is forbidden during the closed season except under permit. Locomotives burning other than oil fuel must be equipped with efficient screens to prevent the escape of fire from their ash pans when operating during the closed season on or within one-eighth mile of forest land, and any steam engine operating within or near inflammable forest debris must be equipped with a steam pump. It is provided that delinquent fire-patrol assessments shall

bear the same rate of interest and the same costs and penalty as the regular ad valorem taxes. And the landowner or operator who is responsible for the existence or starting of a fire is made responsible also for its suppression, regardless of whether the fire burns only on his land or spreads to other land.

Highway Patrolmen to Help in Fire Control in North Carolina

Highway maintenance patrolmen of North Carolina will hereafter give assistance in preventing and suppressing forest fires, under an agreement of the State highway commission and the department of conservation. This brings an auxiliary force of approximately 1,000 men to the assistance of the forest warden force of nearly 3,000. All highway patrol forces will be furnished maps showing the locations of forest wardens who live on or near the highways, and instructions as to how to reach wardens by telephone. Each patrolman will be instructed by the highway commission to report any fires he may discover to the nearest forest warden by telephone, by messenger, or in person, as soon as possible, and to take the initiative in suppressing any small fires that he may discover along his route. Highway patrolmen will also assist forest wardens in determining the causes of fires of which they have knowledge and in preparing cases against persons charged with starting fires. A number of highway patrolmen will be given appointment as deputy forest wardens.

Increased Appropriations for Connecticut Forestry

[From summary by the Connecticut Forestry Association]

An appropriation of \$70,000 has been made by the Connecticut Legislature for forest fire protection in the next two years. This is \$40,000 more than the amount that was made available for this purpose during the last biennium. Authority has been given the State forester to organize special fire-fighting companies, and cities have been made responsible for suppressing grass and brush fires within their boundaries. The governor has been authorized to close the fishing season in case of an unusually dry spring. The appropriation for the purchase of lands to be added to the State forests has been set at \$100,000, with \$25,000 for executive expenses in connection with purchase work. It is estimated that this will make possible the purchase of some 15,000 acres of land, which would bring the total of the State forests to about 50,000 acres. For the operation of the State forestry department during the two-year period \$75,000 has been appropriated, and for the growing of planting stock for use on the State forests \$5,000. The total appropria-

tions for forestry purposes for the biennium is \$275,000, a net increase of \$47,500.

Laws enacted to improve the State's roadside tree situation give the State park and forest commission supervision over the tree wardens, who have hitherto been responsible only to town officials; direct the commission to make a scenic survey of the roads of the State with a view of developing a parkway system; and appropriate \$25,000 for the planting and care of shade trees upon State highways.

Missouri Appropriates for Forestry

The Missouri Legislature has appropriated \$20,000 for the support of the work of the State forestry department during the next two years. This is the department's first appropriation from State funds. Heretofore its activities have been financed by the Missouri Forestry Association.

New Auxiliary State Forest Law and Fire Law in Maryland

The Maryland Department of Forestry is authorized by a recent act of the legislature to accept the use of privately owned lands to be used as auxiliary State forest reserves. Such lands would be devoted to forestry uses and would be subject to the laws, rules, and regulations governing State forest reserves. The State offers no concessions in respect to taxation.

The maximum penalty for malicious or intentional setting of fires to woods, brush, grass, grain, or stubble in Maryland has been raised to a fine of \$2,000 or imprisonment for five years, or both. The limits of the fine for setting fires through carelessness have been lowered to a minimum of \$10 and a maximum of \$100.

Pennsylvania Stops Free Planting Stock Distribution

Free distribution of forest planting stock by the Pennsylvania Department of Forests and Waters is brought to an end by a recent act of the State legislature. The department is authorized to offer trees for sale at a price not exceeding the average cost of production and shipping. The department will still require of those receiving trees the agreement that the trees shall be planted in Pennsylvania for watershed protection or for wood products and that they will not be sold or removed until large enough for use as wood products. No trees will be sold by the department for planting windbreaks or hedges or for use as shade or ornamental trees, with the exception that trees may be grown and sold to be planted for shade or ornamental purposes on State or Federal lands or public-school grounds or along State highways.

Ohio Law Authorizes Demonstration Forests

A new law of Ohio provides for the establishment of forests for the purpose of research and demonstration in practical forestry methods. The board of control of the Ohio Agricultural Experiment Station is authorized to purchase or acquire by gift farm woods or forest tracts representative of the various forest types of the State best suited for this purpose.

The Ohio forest tax law has been amended so as to clarify the assessment section. It now provides that land devoted exclusively to forestry or timber growing shall be taxed on the basis of its agricultural value, at 50 per cent of the local rate. Improvements and all values other than agricultural are to bear the full rate of local taxation; but the value of timber, mature or immature, will not be considered.

Town Forests in Maine

Cities and towns of Maine are privileged under a law of 1927 to acquire lands for municipal and town forests. A two-thirds vote of an annual town meeting or of a city government is sufficient to determine the purchase or acceptance of land for this purpose. The State forest commissioner is directed to furnish seedlings or transplants for planting such forests at cost and to be ready to offer the cities and towns his advice as to forest planting, management, and protection.

Another Big Planting Year in New York

The forest planters of New York State this spring set out five trees for every four they planted a year ago. This spring's total was 21,760,000. Plantings on State land called for 5,400,000.

In explaining the great enthusiasm for reforestation in the State, the New York Conservation Department cites the Fisher law of 1926, which provides that forest land planted since 1921 shall be assessed on the basis of the value of the land exclusive of the value of the trees, a tax of 6 per cent of the stumpage value being collected when the trees are cut. Another inducement is seen in the steady improvement of the State's forest fire protection system, through which the average annual forest fire loss in the fire towns for the past five years was held down to 0.14 of 1 per cent. Early plantings in the State, a good number of which are now 10 years old or older, are every year exerting greater influence as demonstrations of the profitability of reforesting idle nonagricultural land. The value of protective forests on watersheds accounted this spring for orders for more than 1,000,000 trees.

Among large orders filled this spring was that of Otsego County, which has adopted a county forest planting plan that will cost \$5,000 a year for 10 years.

The order of the board of supervisors together with those of municipalities and private planters of the county called for 1,000,000 trees. Essex County is likewise undertaking a 10-year forestry project on which it will spend \$50,000, and St. Lawrence County this year began a county forest with 30,000 white pines furnished by the conservation department.

Pennsylvania Free Planting Stock Distribution

The record for free forest tree distribution in Pennsylvania was again broken this spring, when the State's nurseries gave up about 16,000,000 trees. Of this number more than three-fourths were shipped from the State forest nurseries at Clearfield, Mont Alto, and Greenwood. The largest output from any of the nurseries maintained at State institutions was the 1,588,350 trees distributed from the Rockview Nursery, Centre County, in which all the work of planting the seed and of caring for, lifting, packing, and shipping the seedlings is done by inmates of the Western Penitentiary. The Huntingdon Nursery, at the Pennsylvania Industrial Reformatory, shipped 1,152,550 trees. The Central Forest Tree Nursery established at Milton in 1925 sent out as its first crop 235,000 red oak and black walnut seedlings.

Mount Mitchell Lookout Tower Opened

A stone lookout tower on the summit of Mount Mitchell, N. C., was opened on June 17 and dedicated as a memorial to Dr. Elisha Mitchell. Doctor Mitchell was the first man to determine the peak's altitude. He lost his life, in 1857, in an attempt to descend it alone, and his grave is at the spot where the tower has been erected. The tower is a gift to the State from Col. Charles J. Harris, of Dillsboro, N. C.

Mount Mitchell, with its altitude of 6,711 feet, is the highest peak east of the Great Plains. Its summit

is included in the Mount Mitchell State Park, consisting of 1,224 acres, and is surrounded by lands of the Pisgah National Forest. The new tower, which is about 35 feet high, will serve both as an observation point for tourists and as an outlook for the detection and reporting of forest fires. It is being used by both the United States Forest Service and the North Carolina Department of Conservation and Development.

East Texas Business Men Indorse Forestry

The East Texas Chamber of Commerce at its first annual meeting, held in Tyler April 21, adopted the following resolution:

Whereas adequate reforestation and the growing of timber as a crop on the vast areas in the commercial timber belt of east Texas is of vital concern not only to the east Texas counties but to the State at large in that a proper forestry program will make possible a permanent forest industry, provide a huge pay roll and increased taxable assets: Therefore be it

Resolved, That the East Texas Chamber of Commerce urge the enactment of such fair and just legislation as may be necessary to bring about reforestation and proper forest management on lands best adapted for timber growing, and that this organization pledges itself to work with the Texas Forestry Association, Texas Forest Service, and other groups in inaugurating and developing a constructive forestry program; and be it further

Resolved, That the East Texas Chamber of Commerce highly commends the efficient work now being done by the Texas Forest Service and urges the legislature to provide more adequate support for this activity to the end that the State may, to a greater extent, meet its responsibilities and obligations along all lines of forestry endeavor.

An appropriation of \$15,000 a year for the next two years has been provided for the work of the Oklahoma Forest Commission. The first appropriation was \$5,000 a year.

Education and Extension

With or Without?

By W. R. MATTOON, United States Forest Service

Have we foresters been asleep on our job of "selling" the growing of timber as a profitable enterprise to the farmer or other owner who can cut his timber?

Take timber values, for example. When the farmer thinks of his field crops he sees his wheat threshed, sacked, and delivered at the railroad, his cotton crop picked and hauled to the gin, and his potatoes dug, cleaned, and delivered at the shipping point. His produce is sold together with his own

labor and that of his team or gas engine. In the same way many farmers think about their timber crops in the form of products—pulpwood, firewood, crossties, poles, and logs; but in spite of the fact that farmers usually do or should do their own logging, foresters usually talk to them about stumpage values. Why not encourage the farmer to think more along the line of the market value of his forest products?

Granted that stumpage values are indispensable to the forester and the statistician, do they give the farmer an adequate conception of the returns of timber growing? During slack time in the winter season the

farmer can very advantageously put his labor and that of his team into harvesting his timber, thereby materially increasing his income. Furthermore, the farmer is in a position—or with the aid of the State forest workers and county agents can put himself in a position—to do a much better silvicultural job of his cutting or his logging than the average sawmill man or other buyer would do.

The following is offered as an estimate of the average returns to the farmer in growing southern pines and marketing them, with land rental and labor of man and team figured in as essential elements of value:

An acre of pine will grown an average of 500 board feet of saw logs and one-half cord of wood yearly. This crop, cut and delivered at the mill or railroad, is worth an average of \$7.50. The items are:

500 board feet of lumber at \$10 per 1,000 feet delivered at the mill or railroad	\$5. 00
One-half cord of wood, at \$5 per cord, delivered	2. 50
	7. 50

The farmer thus gets an average money return per acre yearly of \$7.50, itemized thus:

Value of timber grown (on stump)	\$3. 00
Use or rental of acre of land	. 60
Labor of man and team in cutting the timber and hauling the product an average of 2 miles	3. 90
	7. 50

The farmer who figures on his returns for timber in this manner puts timber on a par with the other farm crops; for such a calculation is applicable to all of them. A large part of his profit from field crops comes from his labor. Why not get him to thinking in the same terms about his timber crops?

New Policies, More Funds, and a New Dean at Michigan

Great expansion of the forestry work of the University of Michigan has been made possible by the action of the Michigan Legislature in appropriating additional funds for the university. The forestry department this fall will be superseded by a school of forestry and conservation. Two years of collegiate preparation in the basic subjects will be required for admission to the school, and its standard course will be one of three years' work leading to the degree of master of science in forestry. A two-year course will be offered leading to a bachelor's degree. Provision will be made for graduate work for which the degree of doctor of science may be conferred.

The man chosen to head the new school is Samuel T. Dana, director of the Northeastern Forest Experiment Station of the United States Forest Service, at Amherst, Mass. Mr. Dana is a forester of wide experience in research and administrative work. Since graduation from the Yale Forest School in 1907 he has been connected almost continuously with the United

States Forest Service, leaving it only for one year's military service and for a two-year term as forest commissioner of Maine. He has for many years been a prominent member of the Society of American Foresters, serving terms as president, treasurer, and member of executive council. He is the author of numerous publications on forestry subjects, and was for some time a member of the editorial board of the American Forestry Association. Last year he represented the Forest Service at the World's Forestry Congress at Rome.

Gift to Cornell of Land for University Forest

A gift of 1,750 acres of forest land has been received by Cornell University from the heirs of the late Mathias H. Arnot, of Elmira, N. Y. The property, which has been known locally as the Rodbourn tract, lies near the village of Swartwood, mainly in Schuyler County but with its northern end in Tompkins County. It is easily reached from Ithaca. The tract was culled for white pine many years ago, and the merchantable hemlock and hardwoods were removed in a 14-year lumbering operation begun in 1873. A few years later fuel wood was cut, and in the following decade a novelty mill was operated for a short time. For nearly 30 years the tract has remained untouched.

Members of the Cornell faculty say that the land is typical of a large area of hill country in central and southern New York in which many farms have been abandoned. Its development as a university forest is to begin at once. The research to be conducted on it will include much of the work contemplated under the research professorship in forest soils recently endowed by Charles Lathrop Pack.

A Township Forest Fire Poster Contest in Pennsylvania

By H. A. SMITH, District Forester, Weiser District, Pa.

Mount Carmel Township, Northumberland County, Pa., from the standpoint of number of fires, is one of the worst forest fire sections in one of the worst forest fire districts in the State. The township includes approximately 16,000 acres, of which probably more than 85 per cent is forested. This comparatively small area contains four distinct mountain ridges, as we know mountains in Pennsylvania, running through it from east to west. Between these ridges in the towns and the little villages commonly known throughout the anthracite field as "patches" lives a population of more than 30,000. The population is largely foreign, with Lithuanian and Polish predominating and with a large sprinkling of Italian, and the future of every individual is tied up directly or indirectly with the mining of anthracite. Outside of the towns and villages probably more than 95 per cent of the

forest area belongs to three large coal companies and one large water company. Within this township, only about 5 miles square, with its dense population largely of foreign birth and with its concentrated ownership of property, there occurred in the 1926 spring fire season 75 forest fires burning over a total acreage of approximately 2,500 acres. Of these fires, as reported in the spring of 1926, 29 were caused by railroads, 10 were caused by "lokiess" and steam shovels and other industrial equipment, and 36 were caused by individuals, including transients, brush burners, and smokers, or were of unknown origin.

Faced with this combination of conditions, Inspector Phillips, of the Pennsylvania Department of Forests and Waters, started out to bring to every man, woman, and child within Mount Carmel Township a better knowledge of forest conditions and an increased interest in the prevention and extinction of forest fires. Personal contact through such a large population was impracticable. The foreign population, whom we hoped to reach particularly, are not given to reading boiler plate on forestry subjects in the newspapers, and the schools seemed to be the only means whereby the general public could be reached. A poster contest was therefore devised, including each of the 12 grade and high schools, public and parochial, in the township.

The competition was for the production of the best posters tending to put the subject of forest conservation before the people, increase their regard for the forests about them regardless of ownership, and increase their interest in the prevention and extinction of forest fires. The Roaring Creek Water Co. and the Colonial Collieries Co. each contributed \$25 to the prize fund, and Mr. Randal, superintendent for the Susquehanna Collieries Co., personally gave \$10.

Prizes were offered to the children presenting the 10 best posters, \$10 as first prize, \$5 as second prize, \$3 as third prize, and seven \$1 prizes. Mr. Phillips visited each and every school and explained the proposition to the children, asking for care with fire in the woods at all times and assistance in the extinction of fires that do start, and for cooperation in this particular campaign. Samples of our own posters already in use were placed in each school, and considerable newspaper publicity was used.

The contest was quite a success. From the 12 schools, representing approximately 2,500 students, were submitted 808 posters, drawings, paintings, poems, phrases, slogans, and ideas. These had been selected by the teachers from a much larger number submitted to them. The entries included neat new slogans, such as "Park Your Sparks Carefully." Coupled with these were effective sketches, photographs, prints, and oil paintings. A. C. Silvius, forester for the Philadelphia & Reading Coal & Iron Co., and I served as judges.

The first prize went to Robert Hechler, a fifth-grade boy of Mount Carmel, for a poster in which the slogan "Prevent forest fires," stands out in bold lettering over a simple drawing representing on the left hand a forest destroyed by fire and labeled "Burnt," and on the right a living forest marked "Saved." The prizes were given during American Forest Week, at a special meeting in the Mount Carmel Township High School addressed by the superintendent of the Susquehanna Collieries. Later in the week the winner, with his father, was entertained by the Kiwanis Club, which made up a small purse for him.

A plate was made of the winning poster at the expense of the Pennsylvania Department of Forests and Waters, and a local printing house printed 3,000 copies for \$35. At least one copy was distributed to each pupil of the schools in the township, and other copies were distributed by the protection forces of the mining and water companies. The plate was printed also in the Mount Carmel daily paper.

In the light of our experiences I have several suggestions to make in regard to the conduct of such a contest:

1. There should be separate contests, or at least separate prizes, for grade and high-school pupils.
2. All entries should be of uniform size, entrants being either provided with sheets of cardboard of uniform dimensions or told where they can obtain them.
3. The use of more than one color should be prohibited, owing to the cost of printing.
4. Judges should include two foresters or persons interested in forest protection, and one advertising man.

First Year of Forest Extension in North Dakota

The year 1926 represents practically the first year of extension forestry work in North Dakota, the work having been first established July 1, 1925. During the year Extension Forester C. A. Gillett gave talks in 28 counties to more than 5,400 people. Farm women of the State showed a strong interest in the meetings, the average attendance being 93 men and 53 women. In the spring of 1927 public tree-planting demonstrations were given at 10 points in the State, and although held in crop planting time were attended by 216 farmers.

The interest shown by North Dakota farm people in tree planting is particularly striking in view of the difficulties connected with the growing of trees in the northern Great Plains. In order that as much as possible of the scanty rainfall and snow water may be conserved, the ground needs to be plowed and kept in mulch for an entire season before the planting is attempted. In addition the ground needs to be cultivated for from two to four years after the trees are

established, in order both to conserve water supply and to prevent undue competition from grass and other vegetation. Thus the task of an extension forester in this region does not end with interesting landowners in tree planting. He must give them sufficient stimulus to make them willing to cultivate the land for the better part of a year before they can know the first thrill of achievement that comes with planting the small trees, and after that to cultivate the trees as an eastern farmer cares for his orchard.

All-Inclusive School Essay Contest Held in Humboldt County, Calif.

Every child in the schools of Humboldt County, Calif., was given a chance to win a cash prize in the forestry essay contest conducted there this spring under the auspices of the Humboldt Redwood Re-forestation Association. The contest plan outlined in the *Forest Worker* of January, 1927, was used. Three sets of prizes were offered, the children being divided into groups as follows: (1) Grades below the sixth, (2) the sixth and junior high school grades, and (3) the three upper high-school classes. Children in the primary grades were permitted to enter forestry pictures, cut-outs, or stories. From about 2,000 entries the teachers chose several hundred for submission to a committee of three judges including M. Chester Merrill, supervisor of the reforestation association. Prize-winning essays were published in several daily, weekly, and Sunday papers of the county during American Forest Week.

Vermont Association Holds Essay Contest for Eighth-Grade Children

Eight-grade children in all the 14 counties of Vermont took part in the forestry essay contest conducted this spring, for the second time, by the Vermont Forestry Association. "What Can Boys and Girls Do to Help Forestry?" was the subject assigned. The rewards to the writer of the winning essay, Marion Howe, of Brookline, were a prize of \$25 donated by Mortimer R. Proctor and a trip to Rutland to read her essay before the annual meeting of the forestry association.

Tree Planting at Ohio Extension Meetings

Extension Forester F. W. Dean of Ohio this spring conducted 33 planting demonstrations in 14 counties, and gave 10 talks on forest planting before schools, farm bureaus, and granges. Demonstrations and talks combined reached 1,800 people. One of the demonstrations given during American Forest Week

was in connection with the first planting on a small city forest being started by Bellville, Richland County. More than 250 townsfolk took part in planting 3,000 pines. At an all-day meeting in Medina County, 40 professional and business men planted 12,000 trees at Camp Crag, the summer camp of the Y. M. C. A. At Berea, Cuyahoga County, 600 school children planted Norway spruce for Christmas trees. At Minerva, Stark County, 20 boys of the vocational agricultural class of the high school under the direction of their instructor, O. E. Barker, took part in a demonstration that was witnessed by all the children of the school, two county agents, and the county superintendent of schools and his assistant. The boys planted 1,500 spruce trees on a hillside directly opposite the high school.

Plantings in Two New York Counties

A four-year educational campaign was begun last winter in Steuben and Schuyler Counties, N. Y., by Extension Forester J. A. Cope. The tentative goal was the planting of 100,000 trees in each county this spring. Mr. Cope reports that 98,000 trees were planted in Steuben County and 150,000 in Schuyler County, these plantings representing increases of 80 and 240 per cent, respectively, over those of the spring of 1926.

A window display panel furnished by the United States Forest Service was used in stores in six different small towns in the two counties, about one week in each place. Pine trees cut in the locality were used as a background, and in front of the panel was placed a bucket full of 2-year-old pine seedlings. Spectators were invited to register their guesses as to the number of trees in the pail. Each store owner offered a prize for the best guess, sometimes a planting tool and sometimes a \$2.50 or \$5 gold piece. The registration form called not only for the contestant's name and address but for the amount of idle land he owned, and by following up this information county agents were able to place some orders for trees.

Sawing, Scaling, and Grading Demonstration at Rochester, N. H.

An all-day demonstration of scaling, grading, and sawing lumber was given this spring at the plant of the Studley Box & Lumber Co., Rochester, N. H., through cooperation of the company with the Strafford County Farm Bureau. Nearly 100 State and county officials, lumbermen, and farmers of New Hampshire and western Maine attended. The party picked out a group of small, knotty, and crooked logs and another of large, smooth, straight logs fairly free from knots and watched the two groups go through the mill, keeping tab on the amount of lumber obtained. The

small logs, which had been scaled by the New Hampshire rule and credited to the former owner at 200 board feet, produced 165 board feet of sawed lumber. The large, smooth logs, which had scaled 560 board feet in the log, came out at the other end of the mill as 626 board feet of lumber. The small logs were sawed at the rate of 2,100 board feet per hour, the large ones at 3,700 feet per hour.

At a sidetrack the visitors observed the work of an expert grader of lumber, who explained the basis on which he ordered the boards into this or that pile.

An afternoon meeting was addressed by Owen W. Johnson, of Manchester, president of the New Hampshire Lumbermen's Association, who emphasized the need of proper grading and the advisability of selling lumber before it is cut, so that the wanted sizes can be produced and a surplus of other sizes avoided.

South Carolina to Put Forestry in the Schools

The South Carolina Department of Education made a start during the past school term in introducing nature and conservation work into all the grammar and primary grades of the public schools. The plan adopted calls for the devotion of one period a week to the study of wild bird and animal life, game and fish, trees and forests, and wild flowers. The new work is to be outlined in the State teachers' manual distributed this fall. Herbert K. Job directs the work throughout the State, as State supervisor of nature and conservation studies.

The National Council of the Boy Scouts of America at its seventeenth annual meeting in New York City May 11 and 12 passed a resolution to take the necessary steps to cooperate actively with national, State, and local forestry officials in reforestation work. The council proposes that local scout organizations take part under State supervision in planting trees and shrubs of as many different kinds as possible in public parks, along roads and streets, in wooded lots, and on camp sites and idle land. This work is to be undertaken primarily as reforestation and secondarily for nature-study purposes.

Camp Fire Girls of Humboldt County, Calif., met February 12 on a cut-over area near the Carson Woods, back of Fortuna, to celebrate Lincoln's Day with songs and readings and with the planting of redwood seedlings. School busses and 20 private automobiles furnished through the cooperation of the Eureka Kiwanis Club carried the girls to the spot, and the Holmes-Eureka Lumber Co., owner of the land to be planted, furnished more than 1,000 seedlings from the Scotia Reforestation Nursery. M. Chester Merrill, supervisor of the Humboldt Reforestation Association,

directed the planting, giving a preliminary demonstration of planting methods. Close-up motion pictures were taken of the girls' planting work, to be used in instructing other Camp Fire Girls.

The Nebraska Extension Service this spring distributed 180,000 forest tree seedlings to 1,161 farmers. Plantings were established in every county in the State. The heaviest demands came from counties where planting was done in 1926. For example, Antelope County, with 6 plantings in 1926, this year asked for 41; Thayer County, with 6 plantings in 1926, asked for 43; and Holt County, with 7 plantings in 1926, asked for 65.

Already 1,200 prospective planters have filed application with the Nebraska service for trees in 1928, and indications point to the planting next year of 700,000 seedlings and transplants.

The first Four-H forestry club of Ohio was organized this spring in Harrison County under the direction of County Agent Miller. As its first piece of work the club of 11 boys got 15,000 trees from the State forest nurseries and lined them out in nursery rows to await planting next year. A mimeographed circular on forest planting, illustrated with sketches, has been prepared for the boys' use. Next fall each boy will start a small nursery with seeds of native forest trees collected by the club.

Rural children of Nebraska competed during American Forest Week for prizes offered by the State department of public instruction for the best 500-word essays on forestry subjects. The awarding of prizes amounting to \$25 was made possible by the Izaak Walton League.

Business men of Friendship, Allegany County, N. Y., have donated 65 acres of land to the village as a school forest. Dedication exercises were planned for May 6, when Extension Forester J. A. Cope was to supervise the planting of 10,000 trees by the children of the school.

A new school for outdoor nature study is being conducted this summer in the Allegany State Park, about 75 miles south of Buffalo, N. Y., under the auspices of the Buffalo Society of Natural Sciences. Dr. Robert E. Coker, professor of zoology in the University of North Carolina, heads a faculty of six members. The school aims to give practical field instruction adapted to the needs of public-school teachers and leaders of young peoples' organizations. It is known as the Allegany School of Natural History.

Forest Service Notes

Supreme Court Decision Clarifies Application of Fire Law

The Supreme Court has declared that to start a fire near timber or other inflammable material located on national forest land and leave it unextinguished constitutes a violation of section 53 of the Criminal Code, even though the fire is started outside the forest boundaries. This decision was rendered May 16, 1927, in the case of D. J. Alford, of Crestview, Fla. Mr. Alford was charged by a Federal grand jury with leaving unextinguished a fire he had built on land adjacent to the Florida National Forest with the result that the fire spread to national forest lands where it burned grass and other material. The District Court for the Southern District of Florida sustained a demurrer on the ground that the statute under which the charge was brought is not intended to cover the building and leaving of fires elsewhere than on Government-owned land, and that if so intended it is unconstitutional.

Mr. Justice Holmes, in delivering the opinion of the Supreme Court, said:

"The purpose of the act is to prevent forest fires which have been one of the great economic misfortunes of the country. The danger depends upon the nearness of the fire not upon the ownership of the land where it is built * * *.

"The statute is constitutional. Congress may prohibit the doing of acts upon privately owned lands that imperil the publicly owned forests * * *. Taken in connection with the danger to be prevented it [the statute] lays down a plain enough rule of conduct for anyone who seeks to obey the law."

Madison Laboratory Organizes Biological Section

A biological section has been organized in the Forest Products Laboratory to cover the activities of the laboratory that lie nearest to the work of the forest and range experiment stations. The new section will deal with research on such subjects as wood structure; the relation of wood structure and wood properties in general to tree physiology and growing conditions; forest tree morphology, physiology, and biochemistry; forest soils; the influence of light on forest growth; and on similar subjects in the realm of range investigations. Not all the problems relating to these subjects will be taken over by the biological section. Many can best be handled by the experiment stations, especially by those maintained in cooperation with universities. But within the field indicated there will undoubtedly

arise some problems in connection with which preliminary work on technique and equipment can with distinct advantage be carried on at a central laboratory. Other problems although perhaps national in scope will be best attacked at a single location. It is expected that personnel and facilities will gradually be developed within the section to handle certain classes of routine tests on soils and instruments.

The new section is headed by Carlos G. Bates, who has for many years had charge of the Rocky Mountain Forest Experiment Station. An initial staff of seven persons has been assigned to it by transfer from the Forest Products Laboratory's sections of wood technology and timber mechanics.

Farm Implements as Trail Builders

By RICHARD E. MCARDLE, United States Forest Service

In a recent test of tools for building fire trails, foresters of the North Pacific National Forest District tried out 10 different kinds of plows and graders. The scene of the test was a typical yellow pine area on the Deschutes National Forest, Oreg. The tools tested included the rubottom plow, the Beatty plow, the Oliver reversible plow, an ordinary road drag, a modified drag called a ditcher, a road grader, a "pan-buster," single and double disk plows, a disk harrow, and a road "scarifier."

It was found that the share on ordinary plows invariably catches in roots and rocks and that this trouble is not entirely eliminated by using a rolling colter; that the frame of the disk plows is too near the ground, so that brush clogs up under it; that in all the drags, the Beatty plow, and the disk plows, the drawbar is so close to the ground that it catches brush and holds it in front of the tool; and that the small caterpillar tractor is much more flexible and efficient than a team of horses. The implements that did the best work were the disk plow and a home-made modification of the pan-buster.

From this test it seems that good results can be obtained with a single disk plow, 24-inch disk, mounted on a frame at least 2 feet above the ground in front and with the axles of the front wheels fastened rigidly. This rig makes a trail about 8 inches deep and 6 inches wide and throws the dirt, well broken, to one side for a distance of about 2 feet. Pulled by a 2-ton caterpillar, this plow made a good trail at the rate of 1 mile in 30 minutes and went up a 30 per cent grade with ease. The pan-buster, which in modified form gave better results than any of the other tools tested, is an implement designed for use on farms in breaking up hardpan. It consists in a rather heavy steel frame

supported like a cart on two wide wheels 4 feet in diameter. A steel bar drops down from the rear and on the bottom of this bar is a long point projecting toward the front, as in a rubottom plow. The modification of this, which was made on the spot with the assistance of a local blacksmith, was to remove the long point and substitute a double moldboard, one board on each side of the bar. In completed form the implement resembled a shovel plow or middle breaker, except that the moldboards were much larger and longer and the point, or share, instead of curving down and outward was brought back and in like the prow of a ship. This implement scooped out a rounded trench about 8 inches deep and a foot wide and threw the dirt, well broken up, about a foot on each side, making a good trail about 3 feet in width. With a tractor it can build a mile of trail in 30 minutes, or on good ground 3 miles in an hour. The implement uproots brush 3 feet high and throws it to one side, and clogs very little. It is thought that by substituting a double disk plow for the moldboards even better results could be obtained.

Yellow Poplar Responds Vigorously to Liberation Cuttings

Yellow poplar seedlings on the Pisgah National Forest liberated through thinnings made by the Appalachian Forest Experiment Station in 1924 are showing a very satisfactory increase in height growth. The site is of high quality. When harvested in 1913 the stand yielded 40,000 board feet to the acre, one-half poplar. Two years later there were 5,000 yellow poplar seedlings to the acre together with sprouts and seedlings of other species; but a severe fire in May, 1916, killed or burned to the ground all the reproduction. A tally made in 1922 showed a preponderance of chestnut, silverbell, locust, and red maple sprouts, with much sumac, and a well-distributed reproduction of yellow poplar seedlings which were rapidly becoming suppressed by the sprout growth and sumac. Four half-acre sample plots, with interior reproduction plots, were established in the fall of 1923. In June, 1924, liberation cuttings for poplar were made on two plots. All the chestnut, silverbell, and dominant sumac were removed from one, and all the chestnut and silverbell from a second. The average numbers of trees per acre removed were, chestnut, 739; silverbell, 665; and sumac, 369. Two plots were reserved as controls.

In the control plots the average height of the poplar reproduction less than 1 inch in diameter at breast height is the same in 1927 as it was in 1924. This would seem to indicate that suppression and injury have just balanced new growth and reproduction. In the plots on which the poplar was liberated, on the other hand, the average height of the poplar reproduction shows an increase in the three-year period of 56 per cent.

Chemical Weeding of Longleaf Pine Seedbeds

By PHILIP C. WAKELEY, United States Forest Service

The zinc-sulphate method of weed control, developed at the Savenac nursery by W. G. Wahlenberg and applied on a commercial scale to western white and western yellow pine, has been tried on southern species for two or three years by the Southern Forest Experiment Station. Last year's test on longleaf was so successful that the station persuaded the Great Southern Lumber Co. to treat a 4 by 160 foot bed of longleaf in their Bogalusa nursery.

The bed was treated February 17, 1927, with 8 grams of commercial zinc sulphate per square foot. The seed was sown February 25. On March 22 counts were made on 20 square feet of the treated bed and 20 square feet of untreated beds. Germination was higher and mortality lower in the treated bed and weeds other than grass were almost entirely lacking. Some Bermuda grass was coming in from seed and from roots already in the ground, but it amounted to only one-third of that in the untreated beds.

The same areas within the beds were examined on April 1, when germination was practically complete. The untreated checks showed 10 per cent fewer seedlings than the treated bed, three times as many grasses, and sixty-two times as many weeds other than grass.

The cost of treating the 4 by 160 foot bed was about \$1.80. A certain amount of hand weeding will be necessary because of the Bermuda grass, but it is estimated that the total cost of this weeding and the zinc-sulphate treatment will be only from one-third to one-fifth that of hand-weeding untreated beds of the same size.



Receipts from the operation of the national forests during the first three quarters of the fiscal year 1927 showed a gain of more than \$90,000 over those of the corresponding period of the preceding year. The Government's income from the use of the forests between July 1, 1926, and March 31, 1927, was \$3,369,568.59. Timber sales brought in \$2,303,324.93 during the nine-month period.



All camping parties entering the national forests of the California district since June 15 have been required to carry at least one shovel and one ax for each automobile or pack outfit. Smoking is being prohibited on these forests except at improved camps and places of habitation. Both regulations were made effective for an indefinite period.



The recent civil-service examination for the various grades of silviculturist was entered by 36 men, of whom 29 passed.

General Forest News

International Soil Congress

From the forester's standpoint the most important action of the International Soil Congress, held at Washington, June 13-22, 1927, was the passing of a resolution recognizing the study of forest soils as a distinct branch of soil science and making provision for a forest soils section as a permanent part of the congress, the next session of which is to be held in Russia in 1930.

At the meeting of the forest soils section held in Washington, which was presided over by Dr. Fr. Weiss, of Denmark, about 60 delegates were in attendance and 16 papers were presented. The majority of the papers dealing with definite results of soil investigation were presented by the delegates from foreign countries. Dr. E. Melin, of Sweden, discussed the relationship between mycorrhiza fungi of trees and nutrition. Experiments made by Doctor Melin showed that the trees and the fungi in most cases live "in perfect symbiosis." The fungi are necessary for good development of trees in soils having a high raw humus content. They are not always beneficial, however, and sometimes injure weaker plants. Dr. S. A. Waksman, of Germany, discussed the aerobic and anaerobic decomposition of oak leaves; Dr. G. Kraus, of Germany, the variations in the calcium content of the leaves of copper beech on various sites, the classification of soils, and the graphic representation of mechanical analyses; Dr. P. Albert, of Germany, the mechanical composition of dune sand and its influence on the forest-producing capacity of the sand; Dr. H. Hesselman, of Sweden, the relation of forest and humus cover and the close connection between nitrification and rapid decomposition of vegetable matter; Dr. Fr. Weiss, the distribution of colloids in Danish heath soils and the effect of this distribution on the economic value of the soil. Among the Americans, F. J. Alway, of Minnesota, discussed the effect of fire on the productivity of forest soil; R. E. Neidig and R. S. Snyder, of Minnesota, the cause of low productivity of soils in recently cleared coniferous timberlands; and F. B. Trenk, of the Maryland Forest Service, the occurrence of hickoria in Iowa in relation to soil type. Other papers by American delegates were of a general nature and in a number of instances consisted in an enumeration and explanation of the problems that need to be attacked rather than in an exposition of results. It was evident from the sessions as a whole that in America the intensive study of forest soils is largely in the future.



The Southern Forest Experiment Station reports that there is every indication of a good seed crop of longleaf pine through Louisiana and Mississippi, and of slash pine in several portions of Louisiana.

New Figures on Forest Cover and Run-off

Fresh evidence as to the influence of forest cover on run-off has been brought forward by the Bureau of Public Roads, United States Department of Agriculture. In 1918 the bureau made a study of the rates of run-off from small agricultural areas. The site of the experiment was a hilly area of 112 acres on a farm near Jackson, Madison County, Tenn. Rainfall and run-off were measured with self-recording instruments on six watersheds, and for each watershed a tabulation was made of the rainfall and run-off in nine of the most intense rains of the year. The coefficient of run-off—the ratio of maximum rate of run-off to average rate of rainfall—was figured for each of these rains. The protective influence of timber came out in a comparison of the figures for two watersheds, numbered 1 and 4, of which 14 per cent and 38.9 per cent, respectively, were timbered. The run-off coefficients for the first-named watershed ranged from 0.33 to 0.49, those for the latter from 0.22 to 0.35. "These values," says C. E. Ramser, drainage engineer, in reporting on the experiment, "show quite conclusively that timber has a decided influence in reducing the rate of run-off from a watershed. However, the results obtained for the rain of July 18—for which run-off coefficients of 0.51 and 0.46 for watersheds Nos. 1 and 4, respectively, were obtained—tend to show that the effect of timber in reducing run-off is slight when the maximum rate of run-off occurs after considerable rain already has fallen. This is to be explained by the fact that interception and percolation on timbered areas are much greater at the beginning of a rain than later, so that an increasingly greater proportion of the rainfall runs off as the rain continues. The falling rain is intercepted by the trees, and the cover of leaves on the ground, until saturated, absorbs a large portion of the rainfall. On April 28 the average rates of rainfall were greater than on July 18, yet the * * * coefficients of run-off were smaller, being 0.41 and 0.25 as compared with 0.51 and 0.46 for the rains of April 28 and July 18, respectively. However, the rain that fell prior to the time of concentration (the time when all parts of the area are contributing to the flow) on April 28 was 0.09 inch for both watersheds, while on July 18 it was 0.76 inch for watershed No. 1, and 0.71 inch for watershed No. 4."

The Turpentine Borer on the Florida National Forest

By F. C. CRAIGHEAD, United States Bureau of Entomology

Some 20 years ago a plan of management was adopted for the Choctowhatchee division of the Florida National Forest that was designed to yield the greatest possible return of both gum and timber. The trees

were to be worked for turpentine on a 12 to 15 year schedule, after which the timber was to be sold. This plan has been carried through, and during its progress improvements and modifications in turpentine practices have resulted in the development of what is known as the Forest Service or Government method of turpentine. In the last few years some of the first timber turpentine has been sold for lumber.

In the course of the cutting it became evident that a considerable percentage of the faces had been attacked by the turpentine borer. In a sale completed last year a 25 per cent deduction in the scale was necessary, chiefly because of defect in the butt logs resulting from the work of this borer. The number of windfalls due to the borer has also been high. Great damage was done last fall when the forest was skirted by the big hurricane.

It has long been recognized that this insect presents a serious problem in the turpentine regions, that it attacks dried-out faces and especially burned faces, and that the damage it does is usually associated with destructive turpentine methods and fires. A large percentage of the windfall in the southern pine region, particularly in the second-growth stands that have been so extensively operated in late years, is directly attributable to this beetle. The situation on the Florida National Forest presents a new angle of the problem. Here fire protection has prevented the burning of more than a few faces, and the infestation is associated with the exposure of faces for a long period of years. Thus it becomes necessary to devise means to operate on a long-time schedule without exposing wood in such a way that it will check so as to allow insertion of the borer eggs.

With J. A. Beal, who is in charge of the forest insect field station at Asheville, N. C., I recently made a preliminary examination of the borer infestation on a number of areas of this forest. Areas were so chosen as to permit comparison between different methods of operation and different periods of weathering of the faces.

The infestation can be briefly summarized as follows:

Type of turpentine	Date of first cupping	Number of years cupped	Percentage of faces attacked by borer
Experimental French method.....	1915	6	4
Experimental narrow-faced American method.....	1915	8	27
Forest Service method.....	1912	8	83
Boxing (on private land).....			95

Infestation by the turpentine borer occurs only on wood that has been exposed in such a way that it checks and thus opens crevices in which the insect may insert its eggs. This checking may be the result of (1) fire burning off the protective coating of gum, (2) too deep scraping which removes all the gum and

exposes the wood beneath, (3) drying out of the wood on the ridge between the two angles of the same face, (4) drying out of the wood as a result of dry facing, or (5) drying out of the wood as a result of deep cuts being made for the insertion of gutters.

The so-called Government or standard Forest Service method, particularly with the improvements adopted in the past two or three years, theoretically would prevent the greater part of the infestation by this borer. However, the scarcity of efficient laborers makes it almost impossible to bring about perfect application of the method. The French method as practiced on the Florida National Forest on an experimental scale by I. F. Eldredge and E. R. McKee stands out conspicuously as far superior to all American methods in preventing borer infestation, chiefly because this technique produces a narrow concave face as contrasted to the wider, two-angled face made with the American tools. There is a tendency to a certain amount of drying along the middle ridge of the face even when the Government method is used, whereas with the French system the concave face prevents checking and concentrates what resin flow there is in the center of the face where the deepest exposure of wood occurs. In my opinion some modification of this French system could be adopted that would prevent practically all borer infestation and at the same time meet the objections that are held against the system.

As is so often the case, prevention of injury by this insect coincides with good forestry practices—in this situation, fire protection and conservative turpentine.

No Fires—Fast Growing Pines

By W. R. MATTOON, United States Forest Service

The land holdings of the Timber Products Co., headed by Alex K. Sessoms, at Cogdell, near Waycross, Ga., are coming to be a Mecca to those interested in the growing of slash pine as a business enterprise. Mr. Sessoms has had good success in keeping down fires, and the cut-over lands are reforesting as if by magic. The saplings which once formed thickets have in a few years taken on new life and under conservative turpentine are now yielding a handsome profit.

Mr. Sessoms started about 10 years ago in the cattle business. First he found out that his cattle thrived far better on lands that were not burned. His fences excluded the scrub cattle in a measure and kept their owners from setting fires on his fenced lands. Next he found that turpentine was more profitable than the cattle business, and he quickly saw the high potential value of the incoming young forest for turpentine and timber.

In March of this year I measured some slash pine on the lands of the Timber Products Co. Trees 6 years old were 10 to 15 feet high, 10-year-old trees 20 to 30 feet, and 22-year-old trees, which form ex-

tensive stands now being worked for turpentine, were from 45 to 60 feet high and from 8 to 10 inches in diameter at breast height. One 22-year-old slash pine that had grown under full light measured 17 inches in breast height diameter and was about 60 feet high. Mr. Sessoms and his associates in the business feel that they are just beginning the working of a big paying gold mine.

Turpentine operations are being carried on with excellent supervision under lease to reliable operators. Only one cup is allowed on a tree, irrespective of size. This promises from 20 to 30 years of "working" the trees. Under the system in use the face is chipped for five years, the tree is rested for two years, a new face is then started, and so on until three or four faces have been worked. The tree is then ready to be cut for lumber.

The money returns from slash pine, here in the heart of its best growing region, mount up very attractively at the present time. Mr. Sessoms estimates that under the method just described (which might well be called the five-two-year system) 25 acres of slash pine, with good management, will permit of the working of a crop (10,000 cups). Under present wild conditions on cut-over land that was formerly burned over every year, from 500 to 700 acres are required for the working of a crop. The average yearly gross returns for the gum in the tree, according to an estimate which Mr. Sessoms regards as very conservative, will be from \$10 to \$20 per acre. This means that the total returns for the gum in the tree (or leasing value) will be from \$400 to \$800. This estimate takes no account of the additional value of the timber when the 40-year-old stand is cut for market. At the present time the value of the trees is thought of only in terms of their leasing value for crude gum.

Ribes Eradication Experiment

In efforts to control the white pine blister rust by freeing white pine areas of Ribes, it is necessary to go over the ground repeatedly. Some plants are sure to escape detection on the first working, and even when the area has been thoroughly cleared of plants it must be expected that seedlings and sprouts will later make their appearance. This is amply borne out by an "absolute eradication" experiment conducted by the office of blister rust control, Bureau of Plant Industry, in cooperation with the New York Conservation Department.

The test was made on a 10-acre area in a tract of mixed white pine and hardwood at Deerhead, in the town of Lewis, Essex County, N. Y. Because the leaves of the Ribes play such an important part in spreading the disease, a careful count was made not only of the plants removed but of their leaves. In 1919-20, 219 Ribes (principally gooseberry) plants to

the acre were removed, with an average leaf production of 69 leaves per bush or 15,000 per acre. In 1924 the area was again carefully examined by members of the office of blister rust control and the Ribes were again completely eradicated. At this time there were found 53 seedling Ribes 1 year old or older per acre, or 24.3 per cent of the original stand. These new Ribes had an average of 12 leaves per bush or 625 per acre, only 4 per cent of the number originally found. In addition to the seedlings were found 1 Ribes that had previously been missed, 90 Ribes from sprouted rootstocks, and 172 seedlings recently germinated. These made up a total of 793 Ribes, with 1,172 leaves per acre.

In the 1919-20 operation, 87.7 per cent of the Ribes and 98.2 per cent of the total leafage found in six workings were removed the first time the area was gone over. On the sixth and last working no Ribes were found. In 1924, 60.6 per cent of the Ribes and 70.3 per cent of the leaves found in nine workings were removed the first time the area was gone over, and the first four workings removed 90.9 per cent of the Ribes and 94.7 per cent of the leaves.

Forest Pathologist Seeks Blight-Resistant Chestnuts in Japan

R. Kent Beattie, of the office of forest pathology, Bureau of Plant Industry, sails July 9 for Japan to enter upon a two-year search for blight-resistant chestnuts. A Japanese forester and other local assistants will be employed to help him in this work. He will search primarily for forest-tree chestnuts rather than for the nut-producing varieties, many of which are of poor form and development for lumber purposes. Most of the Asiatic chestnuts introduced into this country in the past have been of the orchard type. Mr. Beattie will visit Korea and Formosa and may visit China and the East Indies. Since the blight that has killed the native American chestnut is present in these countries, chestnut species surviving there are proved to be blight resistant and are desirable for introduction into the United States. Those growing in the Japanese Empire are especially desirable, because the climatic conditions of the parts of the United States in which the chestnut originally grew are more closely approximated there than in the more southerly countries of the Orient.

Considerable trouble is anticipated in getting viable chestnuts from the Orient into the United States because the nuts quickly spoil, especially those from the Tropics. Other possible difficulties in this work are suggested by the outcome of the first effort to introduce *Castanea henryi*. In the forests of China, where it is a large forest tree, this chestnut grows well in spite of the blight. Individuals introduced into this country, however, succumbed to the blight within a short time.

Mr. Beattie's work in the Orient will include an effort to straighten out taxonomically the oriental species in the genera *Castanea* and *Castanopsis*, which now are in a state of confusion. He will send back seed from selected forest trees of other kinds, but this phase of the work will be merely incidental to the effort to introduce blight-resistant chestnuts of forest form.

Breeding Poplars for Pulp

With the pulpwood supplies readily available to operating mills in the eastern States steadily dwindling, many operators are seeking to increase the productivity of their holdings through fire protection and selective logging. It has remained for the Oxford Paper Co. to attack this problem on a new line—through research looking to the production of a tree capable of attaining pulpwood size more rapidly than the native species.

Efforts to breed poplars of more vigorous growth were begun by the company three years ago, in cooperation with the New York Botanical Garden. Dr. A. B. Stout of the botanical garden and E. J. Schreiner of the paper company have as their associate in this work Dr. Ralph H. McKee of Columbia University. Besides the many kinds of poplars of blooming age growing at the New York Botanical Garden those at Highland Park, in Rochester, N. Y., have been made available for use in the breeding experiments, as have trees of the northern form of the necklace poplar (*Populus balsamifera virginiana*) on the grounds of the New York Agricultural Experiment Station at Geneva, N. Y.

Seedlings have been obtained from 96 different cross-combinations between species and varieties, and breeding within several species is well under way. More than 13,000 seedlings are now being grown. The number of seedlings reared from any one cross has usually been limited to 200, although in a few cases the number of sister hybrids being grown is about 500.

The northern strain of the necklace cottonwood, which grows rather widely in New York State, has been used freely, both as male and as female parents. Another species rather freely used is *Populus trichocarpa*, one of the largest of the broadleaved trees of North America, which grows wild from southern Alaska through western Washington, Oregon, and California to the San Bernardino Mountains. Various forms or varieties of the black poplar (*P. nigra*) of Europe have been used, as have the white poplars *alba*, *alba canescens*, *alba nivea*, and *adenopoda*. Some of the most promising of the hybrids have come from such crosses as (1) *P. balsamifera virginiana* X *P. trichocarpa*, (2) *P. angulata* X *P. trichocarpa*, (3) *P. angulata* X *P. balsamifera virginiana*, (4) *P. alba* X *P. tremula Davidiana*, and (5) *P. alba* X *P. adenopoda*.

In two years, of which one was spent in flats and one in a nursery, plants in a number of the groups of hybrids have reached heights of more than 6 feet, and

one seedling has grown more than 7 feet. All the seedlings obtained, whether from cross-pollinations or from inbreeding, are being carefully studied. Selections have already been made of the most promising for rapid propagation as clonal varieties, for tests in reforestation, and for studies of their pulp-making value.

Virginia Mill Practices Selective Cutting

A strict policy of selective cutting has been put into effect by the Camp Manufacturing Co. on fee lands tributary to its mill at Franklin, Va. This mill produces something like 35,000,000 feet of lumber yearly, and has available some 400,000,000 feet of merchantable pine and much young timber. From 20 to 40 trees between 12 and 16 inches in diameter at breast height are being left on each acre of all except the overmature and badly damaged stands, and on these seed trees are being left. The Camp Manufacturing Co. is one of the oldest lumber companies of the South, having been continuously in business in southeastern Virginia since soon after the Civil War. Its reforestation plans have been worked out with Hall, Kellogg, and Co., consulting foresters.

Prize-Winning Waste-Prevention Devices

The big prize of \$1,000 in the national waste prevention contest of this year was won by a multiple guide dimension mill designed by Wm. J. McHale, of the Menominee Bay Shore Lumber Co., Soperton, Wis. In cutting slabs, wide edgings, and long trimmings produced in lumber manufacture into dimension stock with this mill, preliminary sorting and changing of set-ups are made unnecessary and the best yield from each piece of stock is made possible. The mill has four simultaneous set-ups. Three are stationary, each with provision for as many as eight saws and for as close spacing of the saws as 1 inch. Slotted brass covers over the arbor guide the pieces and permit the cutting up of stock as short as 12 inches without choking the saws. Thus these three set-ups can turn out pieces as small as 1 by 1 inch by 12 inches. They will take in pieces up to 12 inches wide. The fourth set-up accommodates stock up to 27 inches wide and is used for ripping stock wider than 12 inches so that it can be fed into the other three set-ups. This fourth set-up has a movable guide and only one saw. The machine thus provides four different set-ups at the same time, handles stock as wide as 27 inches, and turns out pieces as small as 1 inch square and 12 inches long.

The second prize of \$500 was for an edger scale and indicator designed by A. L. Thomas, of the A. C. Tuxbury Lumber Co., Charleston, S. C. Stationary and movable arms extending about 10 feet at right angles to the saw mandrel are fitted with pointers extending downward at the outer end and with indicators at the

saw end traveling along a graduated scale. The pointers are in line with the saws, so that the operator can sight the boards, keep down edging waste, and get the greatest possible yield of square-edged lumber from each. The graduated scale and indicators enable him to cut exact stock widths. The indicators are adjusted by adjustment of the saws and thus add nothing to the cost of operation.

Other prizes were awarded as follows:

Third group, \$100 each: R. J. Moore, of Ernest Dolge (Inc.), Tacoma, Wash., method and necessary attachments for aligning band saws with carriage. Fred Wiebner, of Kneeland-McLurg Lumber Co., Phillips, Wis., pressure roll device for horizontal resaw. A. E. Wyman, of Clark Nickerson Lumber Co., Everett, Wash., lumber trimmer table board turning device.

Fourth group, \$50 each: I. H. Ellington, of W. M. Ritter Lumber Co., Fremont, Va., sectional edger feed roll. A. T. Kjelland, of Weyerhaeuser Timber Co., Everett, Wash., lumber edger line-up device. Edward McCluskey, of Cloquet Lumber Co., Cloquet, Minn., improved rearrangement of dogs for holding small logs on carriage. Bob Merry, of Clear Fir Lumber Co., Tacoma, Wash., method for manufacturing perfect full round.

A Roadside Planting in North Carolina

The Chamber of Commerce and Agriculture of Franklin, N. C., has assumed responsibility for the planting of white pines along 14 miles of highway 286, between Franklin and the Georgia State line. About 750 trees were planted this spring during American Forest Week. Placed at intervals usually of 50 feet, in two rows 27 feet from the center of the road, the trees

line about $3\frac{1}{2}$ miles of the highway. In planting the trees the chamber had the help of forest officers of the Nantahala National Forest, the North Carolina Highway Commission, and owners of property along the route.



Thirteen towns in Vermont and two in Connecticut were released from the gipsy moth and brown tail moth quarantine restrictions July 1, the Federal Horticultural Board of the Department of Agriculture has announced. The Vermont area covers 475 square miles, the Connecticut area 93 square miles.



Fourteen new plants for the preservative treatment of wood were constructed in this country in 1926. This brings the total number to 187, of which 180 were in active operation in 1926. The material treated during the year amounted to 289,322,079 cubic feet, an increase of more than 14,000,000 cubic feet over the quantity treated in the year 1925.



Redwood trees grown from seed planted 14 years ago by the Polson Logging Co. near Hoquiam, Wash., have attained a diameter of 18 inches at the butt. Experiments of the company indicate that redwood is one of the fastest growing trees in the district.



The Humboldt Redwood Reforestation Association, of Humboldt County, Calif., in its nursery at Scotia produced 2,236,000 redwood seedlings for field planting during the 1926-27 season—enough to reforest about 4,200 acres. Last fall the Pacific Lumber Co., a member of the association, shipped 920 pounds of redwood seed to New Zealand and the Union Lumber Co., another member, sent more than 1,000 pounds.

Foreign Notes

The Lesson from Savoy

By E. N. MUNNS, United States Forest Service

The Department of Savoy in southern France is subject, like all mountainous countries, to sudden floods in its upper and lower valleys, and it is doubtful if there is another locality in the world where these occur more frequently. In the period from 1711 to 1920 no less than 1,509 floods of importance were recorded, this despite the fact that many of the earlier records are incomplete. This list does not include general widespread inundations of the lower country such as occurred in 1733, 1772, 1859, and 1899. Neither does it include those that devastated the entire bottom lands of certain of the major streams, each of which was in effect several minor floods combined in one.

The frequency of these disasters shows that they are due not to prolonged rainfall over a large area but to local accidents such as heavy summer thunderstorms or excessively rapid melting of snow as a result of warm rains. Very often these sudden outbursts turn mountain streams into rivers of mud and stones which upon reaching the valleys spread out and deposit their load of silt and debris upon the fields, roads, and villages, destroying valuable agricultural lands, interrupting transportation, and causing heavy property damage.

Similarly, Savoy is more subject to destructive landslides than any other part of France. Many of these landslides are caused by excessive rains or heavy snows on the steep slopes. They are particularly frequent and disastrous where the forests have been

destroyed by overcutting and reproduction has been prevented by fire and overgrazing. At the present time about 5,600 acres of land is particularly subject to landslides which greatly increase the damage done when the rivers in the valleys overflow their banks.

The amount of money damage caused by floods in Savoy can scarcely be estimated. Its magnitude may, however, be gauged from the fact that 11 river floods which took place between 1921 and 1924 caused losses upward of 30,000,000 gold francs. During the first 10 years of the present century at least 100 floods occurred causing more or less destruction. The financial charges against real property along the Savoy as a result of floods is therefore exceedingly high.

Various attempts have been made by foresters and engineers to determine whether the floods are more numerous now than formerly. Such studies have been greatly handicapped by the insufficiency of data from earlier years and by the encroachments of dikes and levees upon the rivers in the last few generations. Thus, 60 floods are recorded in the sixteenth century, 53 in the seventeenth, 329 in the eighteenth, and 1,025 in the nineteenth. Matters appear to have grown considerably worse since the eighteenth century, and it appears probable that destructive floods are now more than four times as numerous as they were at that time.

In part this may be due to a change in climate, since investigations show that during the nineteenth century the mean annual temperature increased more than 2° F., while the average annual rainfall decreased. On the other hand, the number of serious thunderstorms has risen from 9.6 yearly during the period 1830-1839 to 19.6 yearly from 1880 to 1900. This change is in large part attributed to deforestation. In 1738 the forests of Savoy covered some 7,250,000 acres, but through overcutting, fire, and overgrazing there was a loss of some 850,000 acres of forest by 1824 and a further loss of over 350,000 acres by the end of 1910, or a total loss of about 17 per cent of the original forest area. On this destruction is placed the blame for a more rapid run-off of surface water and hence for increased floods.

In order to protect the valleys from inundation and from flood, huge sums have been spent on levees. Since the revolution more than 20,000,000 gold francs have been spent in building levees along four of the principal streams. The value of these works is questionable, as the deposition of debris has raised the beds of the streams and necessitated higher and bigger dikes. The latter have not always been particularly successful in preventing flood damage and do not take care of the landslips. Sometimes a landslip makes the levee system useless by damming up the stream, which later tears out the obstruction and causes heavy losses in the lowlands.

After long years of unsuccessful engineering effort, the French decided that systematic forestation is the only practicable flood-control measure of permanent

value. A general scheme of forest planting has been worked out for Savoy and reforestation is now being undertaken on some 25,000 acres. The increased damage from floods in the Province has made living conditions so precarious and placed such heavy charges against property that radical measures will be necessary to prevent heavy emigration. Already the population has shown a decrease. Whereas the census of 1848 indicated more than 564,000 people in Savoy, in 1921 the population had fallen to less than 461,000.

Cooperative Forestry in Finland

By W. N. SPARHAWK, United States Forest Service

Small timber owners are often handicapped by the difficulty of selling small quantities advantageously. The same difficulty often leads to wasteful utilization. Where only a few trees are available at a time good timber is frequently put to inferior uses, such as for firewood, because of the impossibility of selling it for higher uses and better prices.

In order to increase their incomes and encourage systematic forestry on privately owned land, the Finnish forest owners have turned to the cooperative system that has been so successful in the agriculture of northern Europe. A Central Cooperative Society of Forest Owners was organized in 1921 with a capital of 10,000,000 marks. The common stock can be acquired only by local "cooperatives" or associations of forest owners following cooperative principles, by communes, by parishes, or by the State. Preferred shares are sold also to individual or corporate forest owners. In 1926 the shareholders included about 8,000 private owners, 176 rural communities, 80 cooperative dairies, and a large number of parishes, cooperative sawmill companies, and other societies. The society is headed by three directors, with an advisory council of nine. Of the net profits 30 per cent is put in the reserve fund and 10 per cent is used to redeem preferred shares. Out of the balance interest up to 7 per cent is paid to stockholders, with an additional 2 per cent on preferred stock if funds are available. Any further surplus is prorated among the associations that have done business through the society.

The society aims to encourage and guide private owners in proper handling of their forests, to help them get the maximum returns, to engage in the preparation and merchandising of forest products for export, and to direct the activities of local forest associations. It deals with local cooperative associations, where such exist, rather than with individuals. It is acquiring and developing warehouses and loading facilities at important ports of export, and already owns four warehouses. In 1924 it handled an export business of a little over 38,000,000 marks.

Eight local cooperatives have been organized and more are contemplated. Any individual or corporate forest owner within the territory of a local society may

become a member by subscribing to its stock in an amount based upon his forest acreage. The local societies handle sales of forest products within the country, turning all export business over to the central society. They also furnish technical advice to forest owners. Several own sawmills and saw logs for their members. The local cooperatives put part of their profits into a reserve fund, pay shareholders up to 2 per cent more than the prevailing commercial bank rate of interest, and prorate the balance, if any, among the owners for whom business has been transacted during the year.

By pooling the small lots of timber cut by a large number of owners, the associations are able to sort the logs and to offer quantities large enough to attract buyers. In consequence they can sell as advantageously as the big commercial companies and the individual forest owner is assured of a market for his cut even if it consists of only a few trees. Since more than half of the forests of the country belong to private individuals, mostly in comparatively small holdings, it is believed that the success of the cooperative program will be of the greatest significance for Finnish forestry.

Spain Wakes Up

By W. N. SPARHAWK, United States Forest Service

Spain, which has suffered more from deforestation than any other country of Europe, has recently appropriated 100,000,000 pesetas, or \$19,300,000, for reforestation. This sum is to be spent before the end of 1936, and in all probability will be followed by further appropriations.

Decrees signed by King Alfonso on July 26, 1926, and March 24, 1927, provide for starting the work by establishing nurseries covering at least 10 hectares (24.5 acres) in each Province. Six seed-extraction plants are to be established in addition to those already existing in six Provinces. The new plants will have a total capacity of 52,500 kilograms (115,700 pounds) of seed, and will be used principally to extract seed of *Pinus pinea* and maritime pine. Seed and plants are to be furnished free to private individuals, corporations, and municipal and provincial authorities. Besides supplying planting stock, the Government will advance to private owners 25 per cent of the cost of planting idle land. Repayment of this cash advance is to be begun when the plantations are old enough to yield returns and completed within a period of 25 years.

Where the owners are unwilling to undertake reforestation, idle land may be taken over by the Government. Such as is suitable for colonization will be turned over to the colonization bureau and the remainder will be reforested by the State, either alone or in cooperation with local governments (municipal or provincial). By contributing 50 per cent or more of the cost aside from that of technical supervision and seed or plants, which the State will furnish in any case, the local government can obtain title to the land.

Special attention is to be given to the reforestation of the upper portions of stream basins. In connection with all such projects arrangements are to be made to restrict grazing, without, however, reducing the number of stock except in cases of extreme necessity. It is thought that this can be accomplished by fencing off the better range areas, by reseeding them with good forage plants, by instituting rotation grazing, and by constructing watering places. That grazing regulation is urgently needed in Spain may be judged from the fact that 6,300,000 head of stock, mostly sheep, graze on 12,000,000 acres of public forest. This is three-fourths as many as graze on an area nine times as large in the national forests of the United States.

An Airplane Attack on Pine Moths

The Revue des Eaux et Forêts reports an experiment in destroying pine moths in the forest of Haguenau, Alsace, by scattering arsenate of lime from an airplane. Three parcels with a total area of about 50 hectares were chosen for the experiment. About 1,300 kilos of arsenate were used. The airplane flew at a height of from 3 to 15 meters above the forest, releasing the powder through a hopper. The pilot was guided by panels and pennons and by fires at the angles of the parcels. A time was chosen when the foliage was damp so that the powder would stick to the leaves, as the moths are destroyed not by contact but by eating the powder along with the leaf. About four days after the application dead moths were found on the ground. The success of the experiment was somewhat marred by a heavy rain which fell for two days immediately afterwards and washed away a good deal of the poison before the moths had a chance to sample it. Nevertheless, it was estimated that more than a third of the moths in the parcels were killed. The cost of the experiment was 425 francs per hectare. No harm to game was noted. Several reasons for this are given—the small amount of arsenic in the powder, the small quantity of powder that sifted through the tree tops, the patrol of the area by forest officers during the experiment, and the frightening away of game animals by the noise of the motor of the low-flying plane.

Investment in Canadian Forest Industry

About \$666,000,000 is invested in the forest industry of Canada, according to an estimate of the Canadian Department of the Interior quoted in the Pulp and Paper Magazine of Canada. Nearly one-third of this is in lumbering plants and sawmills, the remainder in pulp and paper operations. The annual production from the forests, including finished products, is worth about \$440,000,000. Sawmills operating in the Dominion number more than 2,500. The annual cut of lumber approximates 4,000 million board feet. Spruce leads other species in volume of cut and is followed by Douglas fir and white pine.

A fire-weather forecasting research service is to be established in conjunction with the Canadian Meteorological Service. The Minister of Marine and Fisheries has made a special assignment of \$12,500 for this purpose.



The Forest Products Laboratories of the Canadian Department of the Interior are to be moved from Montreal to Ottawa. The pulp and paper division will, however, remain at the present location in Montreal. It is being taken over by the Canadian Pulp and Paper Association, which plans to erect a new building there.



More than \$5,218,000 was collected by the Quebec Department of Lands and Forests during the last fiscal year for timber dues, ground rents, and timber limit sales. This was an increase of nearly \$1,000,000 over the previous year.

The use of wood pavement is declining in Paris, according to Bois et Resineux. In 1922 about 23 per cent of the Paris streets (2,461,700 square meters) were paved with wood. In February, 1927, the total wood paving was 2,175,000 square meters. One wonders whether this will make any difference in the consistency of the mud splashed copiously over the narrow walks of the Latin quarter to the detriment of student trousers and skirts whenever a motor bus passes.



Where the new trunk road between Toronto and Cochrane, Ontario, runs through forested areas, the Ontario Government is having clearings made at 15-mile intervals for camping purposes. These sites are cut back into the brush far enough to provide a safe firebreak, and are being equipped with facilities for building camp fires.

Personals

Henry S. Graves has resigned the provostship of Yale University in order to devote all his time to his activities as dean of the Yale Forest School.

Reginald D. Forbes has been appointed to head the Allegheny Forest Experiment Station soon to be established by the Federal Government in the Middle Atlantic States. Mr. Forbes has directed the Southern Forest Experiment Station, New Orleans, La., since its establishment in 1921. A graduate of the Yale Forest School in the class of 1913, he had early experience in the United States Forest Service and in 1916 became assistant State forester of New Jersey. In 1917 he went to Louisiana as State forester, being the first to hold that position under the law requiring the appointment of a man with technical training in forestry.

E. L. Demmon will serve as the acting director of the Southern Forest Experiment Station until a successor to Mr. Forbes has been appointed.

A. F. Hough has been transferred from the Appalachian Forest Experiment Station to the Allegheny. Mr. Hough is a graduate of the New York State College of Forestry and has spent the past year in graduate work at the Yale Forest School. Another member of the new station's staff is O. M. Wood, formerly technical assistant on the Payette National Forest.

E. F. McCarthy has been appointed director of the forest experiment station that has just been established at Columbus, Ohio, in cooperation with Ohio State University, to serve the Ohio-Mississippi Valley region. Mr. McCarthy has for six years served as silviculturist at the Appalachian Forest Experiment Station, Asheville, N. C. Much of his research in

that time has been upon the nature of forest-fire damage and the relation of weather conditions to forest fires. He has made intensive studies of yellow poplar, oaks, and other principal hardwood trees of the Appalachian region, many of which are important also in the Ohio Valley. Mr. McCarthy's earlier experience included nine years' teaching in the New York State College of Forestry. His professional training was received at the University of Michigan.

Bernard S. Meyer, assistant professor of plant physiology at Ohio State University, has accepted a position on the staff of the new station. Doctor Meyer will report for duty in September. Another member of the staff will be Leonard F. Kellogg, a forestry graduate of the University of California and of Yale University who has had experience in the national forests of California and at the Appalachian station. A fourth will be J. H. Hanley, a forestry graduate of the University of Michigan.

Arthur M. Sowder has been appointed to the newly created position of extension forester of Idaho. Mr. Sowder this year received the degree of master of science in forestry from the forest school of the University of Idaho. Until July 1, 1928, he will act not only as extension forester but as research assistant in the Idaho Agricultural Experiment Station. His research work, which is being financed from Purnell funds, will deal chiefly with the influence of windbreaks on the yields of field and orchard crops grown under irrigation.

Vance P. Edwardes has left the United States Forest Products Laboratory to take a position with the Northwestern Pulp & Paper Co., Astoria, Oreg., as

manager of a 110-ton sulphite plant operating entirely on hemlock sawmill waste. Since 1924 Mr. Edwardes has been in charge of commercial contacts of the laboratory's pulp and paper section, including its recent promotional work on white-water recovery and waste sulphite liquor disposal. From 1917 to 1921 he had charge of the laboratory's sulphite investigations, and for the following three years he was employed by the Consolidated Water Power & Paper Co. at Appleton, Wis.

Arthur D. Read, of the Long-Bell Lumber Co., has been transferred to De Ridder, La., where he will direct the establishment of the company's new forest nursery and the planting of several thousand acres of cut-over lands in Beauregard Parish. He will also have charge of improvement thinnings and selection cutting in several Long-Bell forest reserves. Mr. Read was for some years a member of the United States Forest Service, stationed in the Southwest.

Henry L. McIntyre has been appointed to head the bureau of forest pest control in the New York Conservation Department. Mr. McIntyre has been in charge of the gipsy moth control work of the New York Conservation Commission since 1923. Before that he had many years' experience in the gipsy moth control work conducted in the New England States by the Federal Government.

S. A. Graham, assistant professor of forest entomology at the University of Minnesota, has accepted an associate professorship in that subject at the University of Michigan.

A. E. Wackerman has left the Lake States Forest Experiment Station to become forester for the Crossett Lumber Co., at Crossett, Ark.

J. D. Schoeller will leave his post on the Jornada Range Reserve, Las Cruces, N. Mex., about September 1 to become assistant supervisor of the Plumas National Forest, Calif. He has been director of the reserve for the past three years.

M. R. Tillotson, former supervisor of the Cleveland National Forest, has been appointed superintendent of the Grand Canyon National Park. He has for several years been engineer of the park.

William B. Greeley, Chief of the United States Forest Service, received the honorary degree of doctor of laws at the sixty-fourth annual commencement, May 11, of the University of California. On June 22 he received the honorary degree of master of arts from Yale University.

Austin Cary, logging engineer of the United States Forest Service, has been appointed to membership on the forestry advisory council of the Pine Institute of America.

Lord Clinton has been made chairman of the British Forestry Commission, succeeding Lord Lovat.

Dr. Yrjö Ilvessalo, professor of forest management in the Finnish Forest Research Institute at Helsinki, has come to America for studies in forest management that will occupy about six months. His first studies will be in the spruce forests of the East. He will visit the Pacific coast, the northern Rocky Mountains, and the Lake States, and will spend several months at Yale.

T. Hosokawa, secretary of the Ministry of Agriculture and Forestry of Japan, has just concluded a tour of Europe and is visiting this country. Here he is making a study of the administration of governmental forestry work, especially of the cooperative work of the Federal and State Governments.

Dr. M. Dracea, a teacher of silvics in the Polytechnic School, Bucharest, has been brought to this country by the Rockefeller Foundation for several months' study in silviculture and forest products. Doctor Dracea spent several weeks at the Yale Forest School, and attended the International Congress of Soil Science at Washington. His later itinerary includes the forests of the southern Appalachians and the Forest Products Laboratory. Before returning to Rumania he will visit Germany and France.

Dr. Heinrich Hesselman of Sweden, with his son, is making an extended tour of the United States under the auspices of the International Education Board. He will visit most of the forest regions of the country and will make local field trips under the guidance of the directors of the forest experiment stations and members of the staffs of various forest schools. He expects to sail for Sweden in September.

W. G. Campbell, who is a fellow of the Commonwealth Foundation (British), has concluded a two years' stay at the United States Forest Products Laboratory, during which he has engaged in research on the fundamental chemistry of wood. He expects to accept an appointment with the Forest Products Research Laboratories of England.

Verne L. Harper, a forestry graduate of the University of California, has been appointed to assist in the naval stores research work conducted by the Southern Forest Experiment Station at Starke, Fla. Other men appointed from this year's junior forester register to research positions in the United States Forest Service are Arland L. McKinney, who goes to the Appalachian station; Edward Mowat, chosen for the Lake States station; and Daniel Pingree, who is joining the taxation inquiry staff.

A. F. Hough, junior forester appointed to the Allegheny Forest Experiment Station, left the United States June 1 to tour Europe with students of the Oxford Imperial Forestry Institute. The tour will occupy at least eight weeks' time and will include the important forestry countries.

Louis J. Pessin has left the staff of the Southern Forest Experiment Station to return to his old position as assistant professor in the Texas Agricultural College.

Members of the Pennsylvania State Forest Commission reappointed by Governor Fisher are Edward Bailey, Henry W. Shoemaker, Mrs. Mary Flinn Lawrence, and Nelson P. Wheeler, jr.

Officers elected by the Georgia Forestry Association to serve during the current year are: President, C. B. Harman; vice presidents, Mrs. M. E. Judd, T. D. Burleigh, and Mrs. Madge Merritt; secretary, Bonnell H. Stone.

Judge Jacob M. Dickinson, of Tennessee, has been elected president of the Izaak Walton League, succeeding Charles W. Folds of Chicago.

Prof. R. C. Hawley, of the Yale Forest School, sailed in June for three months' travel in Switzerland and Germany.

William M. Ritter, of Washington, D. C., president of the Hardwood Manufacturers' Institute, Memphis, Tenn., has been elected to the board of directors of the American Forestry Association to fill the vacancy created by the resignation of William B. Greeley, chief of the United States Forest Service.

Bibliography

Forests and Sea Power

By E. N. MUNNS, United States Forest Service

It is indeed a pleasure to the forester to find his specialty combined under one cover with world history, to read how forests and the lack of forests have played a dominant part in the development of nations. Particularly is this so when the subject is treated in such a scholarly fashion as in R. G. Albion's "Forests and Sea Power." (Harvard Economic Studies. Harvard University Press, 1926.)

Besides the direct influence of forest resources on the power of nations, the book tells of many strange indirect results of this relationship. A Swedish king's prohibition of naval timber exports helped colonize the coast of Maine; the necessity of keeping the Baltic open for the shipment of high quality fir from northern latitudes brought about early developments in international law; the forests of Africa were exploited by decree of Napoleon, to furnish lumber for his invading fleet; and Nelson was crippled at Toulon because members of Parliament were holding out for exorbitant prices for their timber. In earlier centuries oak, like oil in our own times, caused nations to follow special lines in their foreign and domestic policies, to exert diplomatic pressure, and to develop and encourage colonies. Indirectly it was a cause of war.

The prime example of the relationship of forest resources to sea power is, of course, the naval history of Great Britain. For 200 years, from the days when Cromwell ruled England until the Battle of Hampton Roads sounded the knell of wooden ships of war, the heads of the British Navy worried over the nation's shortage of timber. In all Britain there grew no trees suitable for the best masts. Even in Tudor days builders in the royal yards depended for masts on lumber from the Baltic ports. Time and again England sent squadrons to prevent the interruption of this supply, and constantly she provoked doctrines of neutral rights by waylaying these materials on their

way to rival dockyards. For a century the famous white pine of New England furnished masts for the British Navy; but this supply was discontinued after the American Revolution—among the causes of which, by the way, were the laws through which Parliament guarded these trees and the manner of their enforcement.

Dependence on foreign lands for masts had to be recognized at the outset, but it was with the greatest reluctance that England looked to forests beyond the seas for timber to replace her own oak. The wonderful heritage of excellent native oak forests which England possessed when Henry VIII ascended the throne was wantonly wasted, partly through royal policy and partly through rival economic demands, until at the time of the Dutch Wars the navy began to suffer from their depletion. Measures such as planting and restrictions upon cutting were adopted on the royal forests, but these were so poorly enforced that during the constant naval warfare of the eighteenth century the dockyards had to depend upon precarious supplies from private groves. Just as Napoleon began his great attack on British control of the seas, the supply from the native woodlands definitely fell short of the dockyard demands. Even then, while blockading squadrons were hampered by the need for repair or replacement of leaking and crippled ships, a timber trust was able to withhold the needed supply. Only through extraordinary efforts did domestic timber become available in time to make possible Nelson's success at Trafalgar, and the closing of American and European ports prevented the development of an adequate supply of oak. British possessions sending Canadian oak, African mahogany, Australian eucalypts, New Zealand kauri, and Indian teak saved the situation in part. Rot, however, nearly pulverized the whole navy. Ships were kept afloat with great difficulty because their hulls leaked so badly, bottoms unexpectedly fell out, and vessels hastily constructed rotted before they were placed in service.

Albion's book serves not only to quicken interest in history but also to show how timber supplies can affect national policy and welfare. It should be read by everyone interested in forest economics.

Forestry Handbook for Teachers

The more and more general introduction of the study of the forest into secondary and grade schools has created a need for a forestry guide for trachers. This need the United States Forest Service has sought to meet by publishing "The Forest: A Handbook for Teachers." The author is D. Priscilla Edgerton, now State supervisor of forestry education of Mississippi, who bases on long experience as a teacher and as an educational specialist of the Forest Service her advice as to the choice and presentation of forestry lessons for children. This handbook contains material adapted to the primary grades and detailed outlines for forest study in each term of the fifth to ninth grades. In addition to subject matter the outlines give illustrative material, study questions and practical exercises, suggestions for supplementary reading, and correlations with two or more school subjects such as language, geography, history, and general science. The bulletin suggests many devices for stimulating the child's interest in trees and forests near his home, and gives directions for a number of simple experiments and practical demonstrations through which the child may learn something about the forest through "doing and seeing."

A very limited supply of this publication (Miscellaneous Circular No. 98-M) is available for free distribution by the Forest Service. Orders will be filled by the Superintendent of Documents, Government Printing Office, Washington, D. C., at 30 cents a copy. If orders received by the Superintendent of Documents from all sources total 10,000 copies, it will be possible to fill orders for 500 or multiples of 500 at the rate of \$37.50 per 500.

Suitability of American Woods for Paper Pulp

Woods that may be called upon to substitute for spruce, fir, and hemlock as paper materials are described in a new publication of the United States Forest Service entitled "The Suitability of American Woods for Paper Pulp." The bulletin describes standard pulping methods as related to wood properties and explains the suitability of 94 kinds of hardwoods and softwoods for pulping by both chemical and mechanical processes. The information on pulping qualities of individual species is presented in a convenient semitabular form, with a description of the behavior of each wood when pulped by different processes. Under the common name of each species is given, also, its botanical name,

its range, a list of local names applied to it in different parts of the country, its weight per cubic foot, and its fiber length.

Copies of this publication (Department of Agriculture Bulletin 1485) may be obtained, while the supply lasts, from the Forest Products Laboratory, Madison, Wis., or the United States Forest Service, Washington, D. C. Copies will be furnished by the Superintendent of Documents, Government Printing Office, Washington, D. C., at 20 cents a copy.

Natural Replacement of Blight-Killed Chestnut by Other Species

The sequel to the tragedy of the American chestnut's destruction by blight is predicted in a study newly published by the United States Forest Service, "The Natural Replacement of Blight-killed Chestnut." The chestnut, furnishing a greater variety of valuable wood products than any other eastern hardwood, heretofore constituted nearly half of the hardwood forests of New England, New Jersey, and Pennsylvania, as well as a large proportion of the hardwoods of the Appalachian Mountains. When its extinction became practically certain it was thought that these forests would be left with large gaps requiring extensive planting. The investigations on which C. F. Korstian and Paul W. Stickle report in this circular, however, point to a more hopeful view. These men have found that the blanks caused by the death or salvaging of chestnut are rapidly being filled by such valuable trees as the oaks, the hickories, and white ash, which can in many respects take the place of chestnut in manufactures. Although the forests are still far from being fully productive, and will continue to be much below normal for a number of years after the blight has done its work, they are nearly everywhere making satisfactory progress toward recovery from the loss.

Copies of this publication (Miscellaneous Circular No. 100-M) may be obtained at present from the Appalachian Forest Experiment Station, Asheville, N. C.; the Northeastern Forest Experiment Station, Amherst, Mass.; and the United States Forest Service, Washington, D. C. Copies will be sold by the Superintendent of Documents, Government Printing Office, Washington, D. C., at 5 cents a copy.

Yield and Volume Tables for Southern Pine

Normal yield and volume tables for the southern pines are available upon request to the Southern Forest Experiment Station, New Orleans, La. A study of the yields of southern pines was started by the station in 1921, in cooperation with the southern State foresters and the National Research Council. Field work continued for more than four years and extended through the entire range of the southern pines—from

Virginia to Texas, inclusive. New volume tables for second-growth trees have been prepared according to many different utilization standards. Normal yield tables showing the amount of wood produced from fully stocked stands at different ages have been prepared for the various sites on which the species grow. The tables now offered for distribution in mimeographed form are a résumé of those that are later to be printed.

New Douglas Fir Bibliography

The bibliography on Douglas fir issued by the United States Forest Service October 1, 1924, has been supplemented by one compiled by R. E. McArdle of the Pacific Northwest Forest Experiment Station, Portland, Oreg. Copies of the new as well as of the old list may be obtained by writing to the Washington, D. C., office of the Forest Service.

Correction

When the United States Forest Service first published Miss Edith R. Mosher's verses entitled "What Do We Burn When We Burn Our Trees?" in the American Forest Week program for the use of schools and children's organizations, the verses were erroneously attributed to Stoddard. In the program published by the Forest Service in 1926 these verses were reprinted with a note in regard to the previous error as to their authorship. Miss Mosher now writes that she has seen the verses in several recent publications incorrectly attributed. The Forest Service will be grateful if readers of the Forest Worker make sure not to perpetuate this error.

It should be noted also that in Miss Mosher's original the first line ends with the word "tree," not with "trees" as in the Forest Service publication. The first stanza of the verses is as follows:

What do we burn when we burn our tree?
We burn the home for you and me,
We burn the carriage house, barn, and shed,
The baby's cradle, the little boy's sled,
The bookcase, the table, the rocker of ease,
We burn all these when we burn our trees.

Recent Books and Pamphlets

- American Tree Association: Tree planting book. 40 pp., illus. Washington, D. C., 1927.
Hawley, R. C.: A second progress report of the results secured in treating pure white pine stands on experimental plots at Keene, N. H. 23 pp. (Yale Forest School Bulletin No. 20.) New Haven, Conn., 1927.
Iivessalo, Yrjö: Suomen metsät. (The Forests of Finland. Results of the general survey of the forests of the country carried out during the years 1921-1924.) 613 pp. Summary in English. Valtioneuvoston Kirjapaino. Helsinki, 1927.
Peirson, H. B.: Manual of forest insects. 126 pp., index. (Maine Forest Service Bulletin No. 5.) Augusta, Me., 1927.
Wilcox, R. F.: Planting forest trees in Indiana. 23 pp., illus. (Indiana Department of Conservation Publication No. 62.) Indianapolis, 1927.
Woodward, K. W., and Fletcher, E. D.: The farm woodlot in New Hampshire. 38 pp., illus., map. (University of New Hampshire Extension Service Bulletin 30.) Durham, N. H., 1926.

Articles in Periodicals

- Journal of Forestry, April, 1927.—Influence of precipitation cycles on forestry, by R. Marshall, pp. 415-429.—Forest policy on Indian timberlands, by J. P. Kinney, pp. 430-436.
Mining Congress Journal, April, 1927.—Progress in mine timber preservation in the United States and Europe, by G. M. Hunt, pp. 270-275.
Phytopathology, January, 1927.—Observations on forest pathology in Great Britain and Denmark, by J. S. Boyce, pp. 1-18.
Roosevelt Wild Life Bulletin, October, 1926.—The relation of birds to woodlots in New York State, by W. L. McAtee, pp. 7-152.—The economic importance of animals in forestry, with special reference to wild life, by C. C. Adams, pp. 509-676.

Recent Publications of the Forest Service

- Miscellaneous Circulars: 82, National Forests of Wyoming; 88, Forest Fire Prevention Handbook for Schools of Arizona; 89, Forest Fire Prevention Handbook for Schools of New Mexico.
Map Folder: National Forests of the Black Hills of South Dakota.
Forestry as a Profession.
Abney Level Handbook.
National Forest Proclamation Diagrams: ¼-inch, Kaniksu, Pend Oreille, and Superior.
National Forest Administrative Maps: ¼-inch, Holy Cross, Coronado, Tonto, and Mount Hood; ½-inch, Idaho and Kaniksu (3 colors).